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The Development and Validation of the Practicing Faith Survey

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Abstract

The Practicing Faith Survey (PFS) is a new assessment tool designed to measure the extent to which schoolchildren connect their faith to learning. PFS measures student engagement with five domains of Christian practice in connection with learning: intellectual, relational, introspective, benevolence, and formational practices. We describe the item-development process and then present evidence for the validity and reliability of the PFS based on a sample of 1,300 fifth- through twelfth-grade students who participated in a pilot of the instrument

The Development and Validation of the Practicing Faith Survey

Recent literature has challenged Christian education by posing educators and scholars with the question of what is distinctively Christian about teaching and learning in Christian schools (Smith, 2018; Smith et al., 2014). Underneath this question is a call to critically reflect upon the practices associated with teaching and learning and whether or not they are informed by Christian faith (Green, 2016; Smith, &; Smith, 2011). The Practicing Faith Survey (PFS) is a survey questionnaire designed to assess the extent to which students connect their faith to learning as demonstrated by their engagement with faith-informed practices associated with their life as a student and learner.

The approach diverges from existing measures of student faith-formation, which primarily focus on assent to worldview and doctrinal propositions or query respondents about how often they participate in a narrow set of pietistic practices such as prayer, Bible reading, and church attendance (Green et al., 2019). In other words, the aim of this instrument two-fold. The PFS is designed to (a) move away from solely measuring student beliefs towards measuring the embodiment of those beliefs and (b) measure a broader range of the ways students embody their faith within the life of the school. More specifically, the PFS assesses five domains of Christian practice associated with faithfully living out one's vocation as a student: (1) intellectual practices, (2) relational practices, (3) introspective practices, (4) benevolent practices, and (5) formational practices.

In this article, we document the development of the PFS and describe its psychometric properties to provide evidence for its validity. We begin in the next section by first recounting the motivation for creating the PFS and follow with another section that details how the PFS was developed. At that time, we also provide operational definitions of the five aforementioned

domains of Christian practice. After, we describe the methods we use to provide evidence of the validity of the PFS. Results are presented in the subsequent section and the final section concludes with implications for the practical use of the PFS.

Theological Foundations for Creating the PFS

A variety of assessment tools designed to measure students' faith-formation are available for Christian schools. However, most of these tools focus on student engagement in a narrow set of common religious practices such as prayer or Scripture reading. These tools also tend to query students about their assent to a variety of doctrinal statements or belief propositions. Although knowledge of basic tenets of Christianity, confessions of faith, and the practice of typical spiritual disciplines can serve as indicators of faith formation, they are by no means the sum total of living faithfully. In short, existing instruments typically take a pietistic view of Christian maturity (Green et al., 2019).

Students' dispositions, habits, behavior, and actions are constitutive of Christian maturity. The PFS is designed to assess student faith-formation with respect to what they do, not just what they say they believe. Furthermore, the PFS is focused on measuring faith-formation within the life of the school. In other words, the PFS aims to assess whether students are faithfully living out their vocation as students. Instead of only believing the right things, are they engaging in practices, displaying habits, and acting in a way consistent with the Christian faith as learners and members of their school community? Are they being Christ-like qua students? The PFS is designed to assess faith formation and Christian maturity from this perspective. A deeper treatment of the theological foundations behind the PFS can be found in Smith et al. (2019).

The Development Process of the Practicing Faith Survey

We developed the PFS following practices and guidelines outlined in Gehlbach and Brinkworth (2011), which to our knowledge is the most thorough approach to developing a new survey questionnaires. A variety of equally thorough guidelines for developing questionnaires have been offered as well (Artino et al., 2014).

Literature Review, Student and Educator Feedback

We began development of the PFS by conducting a literature review to define constructs of interest and to consider how related constructs have been measured. Together with higher education faculty, college students, student life professionals, and high school teachers, we reviewed a wide range of existing writing on the vocation of the Christian learner. This literature ranged from contemporary writings about how to be a Christian in college to the thought of past figures such as Simone Weil, Dietrich Bonhoeffer, Comenius, and the monastics. Based on this review, we identified a variety of broad areas of Christian practice.

We also engaged students and educators in a variety of interviews and focus groups with the ways they conceived of Christian practice as it pertains to learning. Sample vignettes illustrating these practices are included in the Appendix A. These examples of students and educators embodying their Christian faith within the life of the school enabled us to conceptually hone the domains of practice for the Christian learner.

At the same time, we specific texts and research on these areas of Christian practice. This included reviewing work on virtue epistemology (Behr, 2016) as well as psychometric literature concerned with validating constructs such as humility (Davis et al., 2015), prosocial behavior (Baumsteiger & Siegel, 2018), civic engagement (Doolittle & Faul, 2013), and curiosity (Litman, & Spielberger, 2003). Engaging with this literature not only enabled us to better identify and

define areas of Christian practice but also provided us with some practical guidance and language to develop items for the PFS.

Operationalization of the Five Domains of Faith and Learning

Synthesizing the information gathered from the review of the literature and the interviews and focus groups, we identified five domains of practices associated with being a Christian learner were identified: intellectual, relational, introspective, benevolence, formational practices. Each of the five domains are defined as follows.

Intellectual Practices. Intellectual practices pertain to practices that enable truth-seeking. To more-finely capture different aspects associated with truth seeking, we further divided the domain of intellectual practices into four subdomains: diligence, humility, love for truth, and faith integration. Diligence refers to practices associated with care and persistence in truth seeking. Such practices might include double-checking the accuracy of statements or work or taking time to deliberate over a variety of viewpoints before forming a judgment about a topic. Humility refers to practices that demonstrate the recognition that one does not perfectly perceive the truth. For instance, acknowledging that one could be wrong about an issue or remaining calm when one's views are challenged are examples of humility as it pertains to intellectual practices. Admitting one's mistakes is also constitutive of humility. Love for truth refers to one's affections for the truth. This affection may be exhibited by attention to detail or a disposition to discuss what one is learning with others out of enjoyment. Finally, faith integration consists of practices that enable one to perceive what one is learning and one's faith as a cohesive whole. An example practice may include seeking out literature for a Christian perspective about a topic or simply pondering how what one is learning bears upon one's Christian faith.

Relational Practices. Relational practices comprise practices focused on attentiveness to the wellbeing of others in the school community. In other words, how are students embodying the command to love their neighbor as themselves? For instance, do students help a struggling classmate, extend welcome to a lonely student, thank adults that serve them, or pray for members of the school community? Given the different nature of relationships between students and their peers compared to students and adults in the school community, we distinguished two subdomains: practices associated with relating to other students and practices associated with relating to members of the school staff.

Introspective Practices. Introspective practices focus on self-examination and discernment of the student's own motives for learning. Are students merely pursuing academic success or are they laboring to prepare themselves as best as they can for their future vocation? Are they pursuing excellence, understood as offering their best to God? The items in the introspective practices domain ask students about how often these motives spur their desire to learn. We did not define any subdomains for the domain of introspective practices.

Benevolence Practices. Benevolence practices are practices associated with seeking the good of the wider community beyond the school. Boundaries of the wider community range from the immediate neighborhood around the students' school or extend as far to the students city or country of residence. Do students make an effort to learn about the needs of their surrounding community or initiate efforts to serve its members? Do students pray for their neighborhood? As in the domain of introspective practices, we did not establish any subdomains.

Formational Practices. Formational practices are aimed at disciplining the self to become a more faithful learner and to have better discernment of one's future vocation. Prayer about one's life as a student, reading Scripture to integrate faith and learning, having times of

reflection, or seeking mentorship are examples of ways students can invest in their own formation as a learner. We divided this domain into two subdomains to distinguish individual practices such as personal prayer and reflection from communal practices such as meeting with friends or mentors to discuss future plans or spiritual growth.

Drafting Items

After these domains were defined, we drafted 149 original items, each designed to measure one of the five domains. Each item was carefully constructed using recommendations from survey research, such as using 5 to 7 response anchors, labeling response anchors rather than relying on numeric labels, and ensuring an appropriate level of readability (Krosnick, 1999; Tourangeau et al., 2000). Throughout the next stages of the development process, we sought to refine this list of items and reduce the length of the survey to about 50 items.

Cognitive Pre-Testing

After the initial draft was created, we held 17 focus-groups in schools to conduct cognitive pre-testing with fifth- through twelfth-grade students. Cognitive pretesting is a formal approach to learn about how targeted respondents (i.e., fifth- through twelfth-grade students in our case) interpret and process the draft items (Karabenick et al., 2007). During these focus groups, the interviewer asks students to review the items and to describe their thoughts as they engaged with each item.

Tourangeau et al. (2000) outline a cognitive process when respondents engage with a survey item. Respondents must first comprehend the item. Next, they must retrieve relevant information to respond to the item and then integrate that information to make a summary judgement. Once this judgment is made, the respondent needs to translate or map their

judgement into one of the response categories listed on the survey questionnaire. Even at this final step, the respondent may edit responses depending on a variety of motives.

Cognitive pre-testing enabled us to understand better the students' thought process and to modify the items accordingly. For instance, students may not have comprehend a word in the item or may have interpreted the item differently than what we intended. These kinds of discrepancies were resolved to improve the draft items. In some cases, draft items were completely removed based on student responses during the focus groups.

Expert Panel Review

After revising the items based on the cognitive pre-testing sessions, we then convened a panel of experts to review our items. The panel included academics from the field of sociology, psychology, political science, and education – all of whom had expertise in using survey questionnaires and some conceptual background in the five domains of Christian practice that we aimed to measure. Secondary-school educators were also included in the panel, given their familiarity with students for whom the PFS is designed.

We spent a day with the 10 members of the expert panel, systematically scoring the readability and conceptual clarity of each item. In other words, we sought the panel's assessment of whether the items were appropriately written for a fifth- through twelfth-grader and whether the item possessed the face validity to be suitable as a measure of one of our five domains.

Based on the recommendations obtained throughout the day, we eliminated additional items and rewrote others to obtain a final list of 56 items to pilot in schools. The data obtained in the pilot phase were eventually used to validate the PFS. We now turn to describing the procedures of the pilot and methods that we used to provide evidence for the validity of the PFS.

Validation Methods

Pilot and Analysis Plan. In the spring of 2019, we piloted the PFS to about 1,300 fifth- through twelfth-grade students across 9 Christian schools throughout the U.S and Australia. However, in order not to overwhelm students with an excessively long survey, students only responded to a subset rather than all of the 56 items of the PFS. Moreover, students only responded to a few additional scales used for the construct validity analysis, depending on which portion of the PFS to which students were asked to respond. We randomly assigned the set of items that students were asked to respond to.

Selected demographic characteristics of the full sample of students who participated in the pilot phase are shown in Table 1. The sample was evenly split by gender and relatively uniform across grade levels, though there were slightly more ninth and tenth-graders. About three-quarters of the students were white.

<<Table 1 Here>>

We computed Chronbach's alpha coefficients for each domain to assess the reliability of measures. We then examined the construct validity of the domains in the PFS calculating correlations between measures from the PFS and other established measures of similar constructs or opposing constructs. Among other measures, we examined correlations between the five domains of the PFS with measures of Big 5 personality traits (John and Srivastava, 1999), tolerance (Sullivan et al., 1981), intellectual humility (Krumrei-Mancuso & Rouse, 2016), and social perspective taking (Gehlbach et al., 2012). Appendix B lists the operational definitions and sources of the established measures that we use in our construct validity analysis.

Although most of the domains on the PFS have subdomains, we do not examine construct validity for every subdomain. We only examine construct validity for the four subdomains in the intellectual practices domain given that there are conceptual differences across the subdomains.

The subdomains among the other domains have sufficient overlap as to not warrant separate analysis. For example, whether a student exhibits healthy relational practices with their peers or with school staff is less of a conceptual distinction and more of an instrumental distinction to underscore the different ways concern for the wellbeing of others in the school community are to be embodied to different members.

Results

Summary Statistics of PFS Measures

We begin by reporting means, standard deviations, and ranges for each of the five domains on the PFS and associated subdomains. These estimates are reported in Table 2. We point out the wide variation found in our data. Students rated themselves on the full range of each domain and subdomain, and mean ratings reach as high as 4.7 in the Love for Truth subdomain to as low as 2.8 in the Relationship with School Staff subdomain.

<<Table 2 Here>>

Factor Structures

We now turn to examining the factor structures for each of the domains. Results from a confirmatory factor analysis with a promax rotation are shown in Tables 3-7. Items are redacted for proprietary reasons but sample items are available from the authors upon request. Factor loadings for each of the items generally align with the intended subdomains. For instance, each of the respective items for the four subdomains under the intellectual practices domain load together, as indicated by the bolded factor loadings shown in Table 3.

<<Table 3 Here>>

However, we did detect a few discrepancies. In Table 4, for instance, we observe that the item inquiring about praying for friends failed to load on the subdomain focused on relational

practices with students' peers. Instead, the item appears to load with the subdomain focused on relational practices with school staff. We posit that the factor model is pinpointing the fact that students less frequently pray for one another, just as they less frequently embody the practices listed on the PFS regarding relationships with school staff. Indeed, average scores for the subdomain of relationships with school staff were the lowest among all other measures on the PFS. Given this empirical explanation and the distinct conceptual definitions of these two subdomains, we ultimately decided to leave the item in the PFS under the relationships with peers subdomain.

<<Table 4 Here>>

We identified a similar discrepancy in the formational practices domain. As shown in Table 5, the item about discussing spiritual growth with others loaded onto both subdomains subdomains. Conceptually, however, this is a communal practice and so we have left it grouped with the other items in the other subdomain. As in the item about prayer in the relational practices domain, the factor model may partially be identifying practices that are common or uncommon among students rather solely identifying the conceptual differences across the subdomains. As an aside, we find it curious that students primarily think of their formation as an individualistic task rather than one that occurs within relationship.

<<Table 5 Here>>

Tables 6 and 7 display factor loadings for the remaining two subdomains: introspective practices and benevolence practices. All items appear to load together in each respective scale, as desired.

<<Table 6 Here>>

<<Table 7 Here>>

Reliability

In Table 8, we list the Chronbach's alpha coefficients for each of the five dimensions and any subdomains of the PFS. In all cases, Cronbach's alpha coefficients were at least 0.70, indicating a sufficiently high degree of reliability for measures of each of the five domains and their respective subdomains.

<<Table 8 Here>>

Construct Validity

We now to turn to results for our construct validity analyses. Results are shown in Table 9. For each domain or subdomain in the table, we report the magnitude of its correlation with other scales that have both been validated in the past and measure a theoretically-related construct.

Intellectual Practices. In the first four panels, we report the respective correlations between each of the four subdomains of the intellectual practices domain and a variety of other measures. For instance, the subscale diligence in truth-seeking is positively correlated with Sullivan et al.'s (1981) measure of tolerance and Krumrei-Mancuso and Rouse's (2016) measure of respect for other's viewpoints. The correlation coefficients are 0.42 and 0.46, respectively. Given that we designed the diligence in truth-seeking to constitute items associated with weighing competing truth claims or considering a variety of perspectives, these correlations are expected. The diligence in truth-seeking subscale is additionally correlated with the Big 5 measure of conscientiousness, albeit more weakly so given that we are evaluating students' conscientiousness on the narrower task of truth seeking rather than general conscientiousness (John & Srivastava, 1999).

<<Table 9 Here>>

As shown in Panel B, we observe that the measure of the humility subdomain is correlated with measures of openness to revising one's viewpoint (Krumrei-Mancuso & Rouse, 2016) and social-perspective taking (Gehlbach et al., 2012). The magnitude of the correlation is 0.48 and 0.61, respectively. Both of these scales are similar to the humility subdomain, which measures the extent to which students recognize that they do not perfectly perceive the truth and that others might more accurately perceive it.

Similarly, measures of the subdomain love for truth is correlated in the expected direction with measures of epistemic curiosity (Jordan & Spielberger, 2003), openness (John & Srivastava, 1999), and joyous exploration (Kashdan et al., 2017). Correlations range from approximately 0.40 to 0.50. Although the subdomain love for truth conceptually extends beyond curiosity and openness, the shared variation in the love for truth subdomain with these two scales is evidence of its validity. Its correlation with joyous exploration provides additional evidence of construct validity.

The final subdomain of the intellectual practices domain, faith-integration, is correlated with a variety of measures of religiosity (Joseph & Diduca, 2007). It is most strongly correlated with a measure of religious preoccupation, defined as the extent to which God occupies one's thoughts — a result that is expected given that the faith-integration domain is designed to measure the extent to which students consider how their school curriculum is related to their faith. Here, correlations range from about 0.60 to just above 0.70.

Relational practices. Evidence for the construct validity of the relational practices domain are displayed in panels E and F. Panel E contains the correlation coefficients for the subdomain regarding relationships with peers, while Panel F contains correlation coefficients for the subdomain regarding relationships with school staff. Theoretically related measures of

empathy (Vossen et al., 2015), empathic concern, (Davis, 1983), intrapersonal self-management (CASEL, 2005), and agreeableness (John & Srivastava, 1999) are all positively correlated with the measure of relational practices with peers.

Although we observe the same pattern of correlations for the measure of relational practices with school staff, the magnitudes are slightly lower, and correlation with the Big 5 measure of agreeableness is insignificant. These lower correlations are likely due to limited variation in this subdomain, given that most students do not regularly engage in these practices and hence score fairly low on this measure.

Introspective practices. We examined correlations between our introspective practices domain with measures of epistemic curiosity (Litman & Spielberger, 2003) and joyous exploration (Kashdan et al., 2017). The motives that are measured on these two scales are similar to motives listed in our measure of introspective practices. As shown in panel F, the correlation between our measure of instrospective practices and these two other measures are just above 0.50.

Benevolence practices. Benevolence practices associated with concern for the wellbeing of the wider community are correlated with measures taken from Doolittle and Faul's (2013) Civic Engagement scale. As expected, measures of civic attitudes and civic behavior are positively correlated with the measure of benevolence practices on the PFS. Correlation coefficients are 0.68 and 0.66, respectively.

Formational practices. Given that formational practices comprise several traditional devotional practices such as reflection, prayer, Scripture reading, and fellowship, we examined correlations between conventional measures of religiosity with each of the two subdomains of formational practices.

Drawing from Joseph and Diduca's (2007) Dimensions of Religiosity scale, we first found that measures of individual formational practices are positively correlated with religiosity measures. Correlation coefficients are at least 0.70. We further computed the correlation between measures of individual formational practice with Robitschek's (1998) Personal Growth Initiative scale. Here, the correlation coefficient is low and insignificant only. This result may be attributable to the secular framing on the Personal Growth Initiative Scale (e.g., I have a specific action plan to help me reach my goals), whereas our measures of formational practices comprise faith-informed practices aimed at disciplining the self to become a more faithful learner and to have better discernment of one's future vocation.

On the other hand, measures of the subdomain of communal formational practices are not only correlated with measures of religiosity but also with personal growth initiative. Again, however, the correlation with personal growth initiative is relatively weaker and, in this case, only significant at the 0.1 level.

Discussion and Conclusions

Be began this article by arguing for a need to develop a new instrument to assess faith-formation among students in Christian schools. We then described the practical development of the PFS and presented evidence for its validity. Relying on guidance and best practices for instrument development as articulated by Gehlbach and Brinkworth (2011) helped us ensure conceptual clarity and robust psychometric properties for our measures. Indeed, we were able to confirm the factor structure, demonstrate a sufficient level of reliability, and demonstrate the construct validity of the five domains and subdomains of the PFS. The thorough development procedure and the sound psychometric properties of the PFS lends confidence for its practical use by students and educators alike. With additional modifications to the items and development

of new items, we anticipate that the PFS will be a sound tool for students to more wholly reflect upon their own faith formation and for their teachers, parents, and friends to come alongside them in support.

However, we wish to end with a few cautionary notes about its application. We begin by nothing that the PFS is not designed to comprehensively capture all aspects of faith and learning. One easily identify a host of other faith-informed virtues and practices that are consistent with Christian excellence as it pertains to the life of the student. For example, a variety of other intellectual virtues are not captured by the PFS (Behr, 2016).

Measurement is inherently reductive. Although measurement provides concreteness to abstract principles, no measure ever does so perfectly. Attempts to measure complex and irreducible concepts that are highly contingent on a variety of contextual details, like virtue and faith-formation, are no exception. As educators increasingly rely on data and analytics to inform their teaching and student learning, we urge them to guard against the temptation to let PFS be a substitute to their own prudence and judgement about a student's faith formation. Statistical data is merely one way to discern the reality of student progress. Everyday interactions and observations that occur in the classroom are equally valid data points. So while we want to encourage educators to use data from the PFS to inform their practice, we also caution them against an overreliance on and deference to such data. To cite another virtue, we are arguing for temperance in the use of the PFS.

Likewise, students who take the PFS should moderate their own interpretations of their scores. Our aim is not to provide a source of data for students to consume and utilize in a pragmatic, technical fashion to maximize one's scores on each of the PFS domains. Nor should students focus on comparing their assessment with their peers. The PFS is designed to provide

students with a snapshot on a variety of domains about their faithfulness to their current vocation as students. At any given instance, all students will be stronger in some areas and weaker in others. The point, however, is to reflect and discern what areas can one grow and to resolve to do so. Such is the ethos of always working out one's salvation and recognizing the tension that perfection remains elusive for now. Ultimately, we hope the PFS will represent a resource that students can use to become more faithful in their learning.

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Table 1: Sample Characteristics

	Percentage
Gender	
Male	49.1
Female	50.9
Ethnicity	
White	77.4
Hispanic	9.6
Black	4.7
Asian	2.8
Other Ethnicity	5.5
Grade Level	
5	9.9
6	10.5
7	13.0
8	9.1
9	17.7
10	17.3
11	13.2
12	9.3

Table 2: Summary Statistics and Chronbach's Alpha

	Mean	Standard Deviation	Minimum	Maximum
Intellectual Practices	4.0	0.9	1	6
Subdomain 1: Diligence	4.0	1.0	1	6
Subdomain 2: Humility	4.3	1.0	1	6
Subdomain 3: Love for Truth	4.7	1.0	1	6
Subdomain 4: Faith Integration	3.5	1.3	1	6
Relational Practices	3.7	0.8	1	6
Subdomain1: Relationship with Peers	4.5	1.0	1	6
Subdomain 2: Relationship with School Staff	2.8	0.9	1	6
Introspective Practices	4.4	1.0	1.4	6
Benevolent Practices	3.1	0.9	1	6
Formational Practices	3.2	0.7	1	6
Subdomain 1: Individual Practices	3.4	0.8	1	5
Subdomain2: Communal Practices	3.0	0.8	1.2	5

Table 3: Factor Structure for Intellectual Practices Domain

Item	Diligence	Humility	Love for Truth	Faith Integration
I double-check …	**0.710**	-0.064	0.168	0.023
I consider different	**0.864**	-0.012	-0.110	-0.005
When I encounter ...	**0.708**	0.033	-0.011	0.100
When I tell ...	0.149	**0.570**	0.091	-0.168
When I disagree ...	-0.060	**0.845**	0.036	-0.044
I recognize that	-0.040	**0.745**	0.041	-0.004
I keep calm	0.237	**0.494**	-0.113	0.005
When I am inaccurate ...	-0.033	**0.720**	-0.062	0.213
I think about how ...	0.035	0.016	**0.872**	0.007
I seek out readings...	0.024	-0.033	**0.860**	0.003
I think about how ...	-0.085	0.033	**0.918**	0.004
I am grateful ...	-0.062	0.126	0.085	**0.619**
I believe that the beauty ...	-0.127	0.119	0.060	**0.763**
I pay attention to …	0.009	0.104	-0.080	**0.765**
I take time outside …	0.165	-0.031	0.159	**0.641**
I start conversations ...	0.029	-0.052	-0.024	**0.830**
I enjoy talking about ...	0.085	-0.122	-0.043	**0.846**

Notes: Loadings after a principal components factor analysis with promax rotation are displayed. Bolded items load onto the same factor. Items are redacted for proprietary reasons. Sample items are available upon author request.

Table 4: Factor Structure for Relational Practices Domain

Item	Relationships with Peers	Relationships with School Staff
I pay attention ...	**0.767**	-0.036
I ask friends ... how I can pray…	0.144	**0.591**
I try to include ...	**0.519**	0.198
If a classmate ...	**0.796**	0.017
When someone is ...	**0.595**	0.204
I make myself ...	**0.782**	-0.186
If a classmate ...	**0.700**	0.043
I tell my teachers ...	0.048	**0.755**
I tell my principal ...	0.004	**0.85**
I let my school's ...	-0.066	**0.772**
I tell my school's ...	-0.059	**0.895**

Notes: Loadings after a principal components factor analysis with promax rotation are displayed. Bolded items load onto the same factor. Items are redacted for proprietary reasons. Sample items are available upon author request.

Table 5: Factor Structure for Formational Practices Domain

Item	Individual Practices	Communal Practices
I think about how I can apply…	**0.834**	-0.165
I read articles …	**0.731**	-0.068
I reflect on …	**0.807**	0.029
I pray …	**0.711**	-0.138
I meet with …	-0.044	**0.845**
I meet with …	-0.117	**0.852**
I meet with …	-0.050	**0.806**
I ... discuss my spiritual growth.	0.497	**0.422**

Notes: Loadings after a principal components factor analysis with promax rotation are displayed. Bolded items load onto the same factor. Items are redacted for proprietary reasons. Sample items are available upon author request.

Table 6: Factor Structure for Introspective Practices Domain

Item	
To experience …	0.537
To be equipped …	0.555
To better …	0.831
To know …	0.854
To be prepared ...	0.830
To honor ..	0.877
Because I recognize …	0.786
To offer …	0.842

Notes: Loadings after a principal components factor analysis with promax rotation are displayed. Items are redacted for proprietary reasons. Sample items are available upon author request.

Table 7: Factor Structure for Benevolence Practices Domain

Item	
My classmates and I work ...	0.692
My classmates and I discuss ...	0.791
Together with my classmates, I keep up to ...	0.654
I think about how to apply ...	0.762
My school makes me think ...	0.768
My classmates and I pray ...	0.710

Notes: Loadings after a principal components factor analysis with promax rotation are displayed. Items are redacted for proprietary reasons. Sample items are available upon author request.

Table 8: Factor Structure for Benevolence Practices Domain

	Chronbach's alpha
Intellectual Practices	0.88
Subdomain 1: Diligence	0.71
Subdomain 2: Humility	0.70
Subdomain 3: Love for Truth	0.79
Subdomain 4: Faith Integration	0.87
Relational Practices	0.87
Subdomain1: Relationship with Peers	0.81
Subdomain 2: Relationship with School Staff	0.84
Introspective Practices	0.90
Benevolent Practices	0.82
Formational Practices	0.81
Subdomain 1: Individual Practices	0.76
Subdomain 2: Communal Practices	0.74

Table 9: Construct Validity

	r	Observations
Panel A: Correlation with Diligence in Truth-Seeking		
Big 5 Conscientiousness	0.27*	48
Toleration of People with Opposing Views	0.42***	49
Respect of Opposing Views	0.46***	45
Panel B: Correlation with Intellectual Humility		
Openness to Revision	0.48***	45
Social Perspective Taking	0.61***	48
Panel C: Correlation with Love for Truth		
Epistemic Curiosity	0.43***	45
Big 5 Openness	0.51***	47
Joyous Exploration	0.45***	48
Panel D: Correlation with Faith-Integration		
Religious Preoccupation	0.74***	48
Religious Conviction	0.60***	47
Religious Guidance	0.58***	45
Religious Emotional Connection	0.63***	48
Panel E: Correlation with Relational Practices with Peers		
Empathy	0.60***	43
Empathic Concern	0.54***	48
Intrapersonal Self-Management	0.63***	45
Big 5 Agreeableness	0.40**	49
Panel F: Correlation with Relational Practices with Staff		
Empathy	0.35**	48
Empathic Concern	0.39***	43
Intrapersonal Self-Management	0.39***	45
Big 5 Agreeableness	0.16	49
Panel G: Correlation with Introspective Practices		
Epistemic Curiosity	0.56***	44
Joyous Exploration	0.54***	44
Panel H: Correlation with Benevolent Practices		
Civic Attitudes	0.68***	43
Civic Behavior	0.66***	43
Panel I: Correlation with Individual Formational Practices		
Religious Preoccupation	0.70***	44
Religious Guidance	0.78***	46
Religious Emotional Involvement	0.76***	44
Personal Growth Initiative	0.15	47
Panel J: Correlation with Communal Formational Practices		
Religious Preoccupation	0.31**	44
Religious Guidance	0.40***	46
Religious Emotional Involvement	0.37**	44
Personal Growth Initiative	0.27*	47

Notes: *p<0.1; **p<0.05; ***p<0.01

Appendix A:

Example Vignettes Illustrating Student and Educator Conceptions of Christian Practice Associated with Learning

1) A student relates that after a year in college he had become uncomfortable with the way in which he was surrounded by people serving him (preparing meals, maintaining buildings and grounds, teaching, etc) but was giving little back. It seemed an egocentric way to live. He resolved in the coming semester to adopt as a spiritual discipline an intentional practice of getting to know, praying for, and looking for ways to serve those who worked in food services, physical plant, and campus safety.

2) A student was asked in a focus group whether any of his school's emphasis on discipleship practices found application in his life outside school. He pointed to creation care as a Christian practice explored in his science classes in school and described how he and his friends had spontaneously decided the previous weekend to spend part of Saturday picking up trash on the local beaches instead of heading for the mall.

3) A student describes how when she is using the internet on her school laptop she imagines God watching what she is doing, and how this serves as a conscious strategy for maintaining a barrier against the temptation to seek out inappropriate websites or otherwise use her online time unwisely. This is connected in her mind to the school's emphasis on asking students to consider how to use technology with Christian discernment.

4) A student describes how she has become aware, in part through themes in her devotions, that she could be doing much better at being able to listen well to others, and that this includes listening well to the teacher and to fellow students in class. It is something she intends to work on, and as a first step she has given some thought to where she tends to sit in those classes in which she has a choice. She has decided to choose where to sit based on how it might help her to listen well.

5) A school principal and her staff assumed that habits of Christian practice at home reinforced the faith formation occurring at school, in particular the integration of worship, prayer and devotions into teaching and learning. When they participated in a research survey, they discovered that the way students and their families lived out Christian life at home was quite different to what they had always assumed. Many of their students were not from families who regularly attended church anymore. The principal used the survey data to talk about this with her staff team. They decided that as well as focusing on curriculum content they needed to pay attention to creating opportunities for students to participate in liturgy and Christian practices within the classroom and beyond it in the life of the school.

Appendix B: Operational Definitions and Sources of Constructs used in the Construct Validity Analysis

Construct	Definition	Source
Big 5 Agreeableness	Friendly, cooperative, sympathetic, kind	John & Srivastava (1999)
Big 5 Conscientiousness	Reliable, diligent, careful, organized, tendency to pay attention to detail	John & Srivastava (1999)
Big 5 Openness	Having a predilection to have new experiences and learn new things	John & Srivastava (1999)
Civic Attitudes	Having attitudes consistent with the belief that one can and should make a difference in enhancing his community	Doolittle and Faul (2013)
Civic Behavior	Taking actions and acting in ways that make a difference in enhancing one's community	Doolittle and Faul (2013)
Empathic Concern	Having sympathy and concern for unfortunate others	Davis (1983)
Empathy	Ability to and willingness to understand feelings and thoughts of another person	Vossen et al. (2015)
Epistemic Curiosity	A drive to know and fill in gaps in knowledge	Jordan & Spielberger, 2003
Intrapersonal Self-Management	The ability to successfully regulate one’s emotions, thoughts, and behaviors within the context of interacting with others	CASEL (2005)
Joyous Exploration (Subscale of Five-Dimensional Curiosity Scale)	The tendency to take pleasure in exploring uncertainties and learn new things	Kashdan et al. (2017)

Openness to Revision (Subscale of Intellectual Humility)	The disposition to change one's position or viewpoint when warranted	Krumrei-Mancuso & Rouse (2016)
Personal Growth Initiative	The tendency to engage in activity to change and develop as a person	Robitschek (1998)
Religious Conviction (Subscale of the Dimensions of Religiosity Scale)	The tenacity and confidence to which beliefs are held	Joseph & Diduca (2007)
Emotional Involvement (Subscale of the Dimensions of Religiosity Scale)	The degree and frequency to which someone experiences emotional feelings associated with holding a religious belief	Joseph & Diduca (2007)
Religious Guidance (Subscale of the Dimensions of Religiosity Scale)	The extent to which one's religion guides one's life and decision-making process.	Joseph & Diduca (2007)
Religious Preoccupation (Subscale of the Dimensions of Religiosity Scale)	The extent to which one's thoughts are occupied by God and religious beliefs	Joseph & Diduca (2007)
Respect of Opposing Views (Subscale of Intellectual Humility)	The ability to give consideration and due regard to viewpoints with which one disagrees	Krumrei-Mancuso & Rouse (2016)
Social Perspective Taking	The ability to take the perspective of others	Gehlbach et al. (2012)
Tolerance	The willingness to let others with views one opposes exercise civil liberties.	Sullivan et al. (1981)